EUROMNIS 2018

# DEVOPS WITH OMNIS STUDIO

# AGENDA

- My journey to a better way of building Studio apps and why does this matter to you?
- What is DevOps and why I dislike that term
- How to DevOps with Studio

# MY JOURNEY TO A BETTER WAY OF BUILDING STUDIO APPS

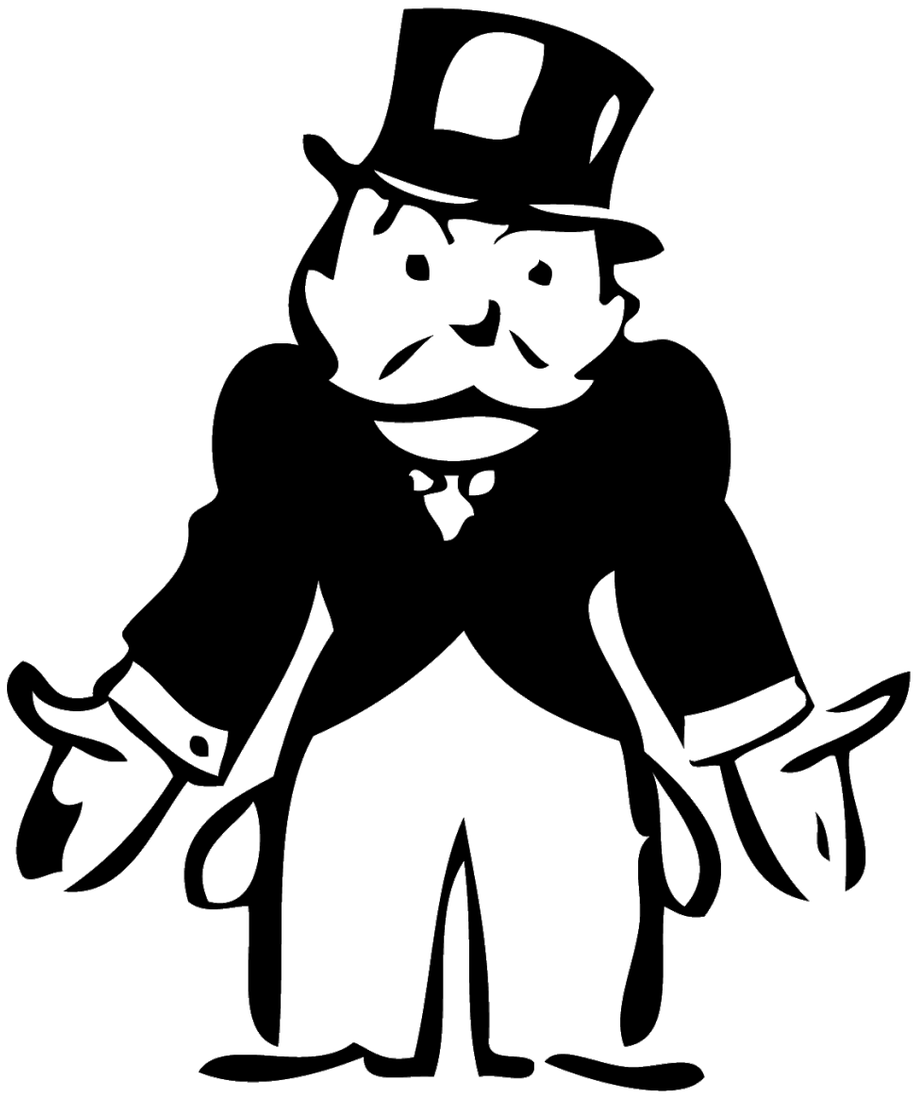
- Software Development Manager at Suran Systems, Inc.
- Family-owned business turned 30 years old in December
- Our products used Omnis Classic in the 80's and 90's
- Moved to Studio in early 2000's
- Completed our Classic to Studio port by the late 2000's
- Hit a wall

# CHALLENGES IN 2009

- Developers were spending time helping our support team track down bugs instead of coding
- When we did code, we were spending more time fixing bugs than adding new features
- Bug fixes often caused regressions which was a double blow to user confidence
- Needed to switch off OpenBase to PostgreSQL
- Couldn’t afford a shaky transition like the Classic to Studio re-write

# THE ROOT CAUSE OF THESE CHALLENGES

- As we learned and adopted new techniques, we rarely went back to apply them to existing code
- It was dangerous to work with the existing code because you could break something and not know it
- And yet, needing to add new features and fix bugs required us to work with existing code
- This lead to copied and pasted code, duplicated functionality, and increased complexity



WE FOUND
OURSELVES DEEP IN

# TECHNICAL DEBT

# WHAT IS TECHNICAL DEBT

- As a change is started on a codebase, there is often the need to make other coordinated changes
- Required changes that are not completed are considered debt that must be paid at some point in the future
- If technical debt is not repaid it can accumulate 'interest', making it harder to implement changes later on
- Unaddressed technical debt increases software entropy

# HOW DID WE GET INTO TECHNICAL DEBT

- We pushed to get the classic version ported
- At the same time, we need to build new features to serve our customers
- We didn’t devote time to improving the code itself
- We were afraid to improve our code because it could cause new bugs (regressions)
- So we leaned on minimal changes at the expense of the right fix

# EFFECTS ON OUR BUSINESS

- Users had a negative experience because of bugs; they hated updating
- We spent more and more time fixing bugs than developing new features
- When we did fix a bug, there was low confidence it would stay fixed
- We needed to move away from OpenBase and develop new features to stay competitive, but how could we possibly do that without making things worse?

# IT ALL CAME DOWN TO ONE ELEMENT:

# QUALITY

# HOW COULD FOCUSING ON QUALITY HELP ADDRESS OUR CHALLENGES?

- Improve our user's experience
- User will stay with the product and invest more
- Reduce support time tracing down problems
- Free up development time to build new products
- Improve developer confidence in our codebase
- Learn to become better developers to build better products

# WHAT IS QUALITY?

- Quality is matching the product's **behavior** to its **expectations**
- If you don't understand the stakeholders' **expectations** you waste time and money solving the wrong problems
- If the product doesn't **behave** as expected, you waste time understanding why and changing its behavior

# HOW DO YOU UNDERSTAND PRODUCT EXPECTATIONS

- You can ask what users want, or they can tell you what the want, but…
- People aren’t good at describing new features
- They’re much better at describing how to change existing software or explaining how a new feature is “like” an existing feature
- Fortunately, Omnis is good at prototyping and building solutions quickly

# THE SOLUTION TO UNDERSTANDING PRODUCT EXPECTATIONS

- Ship a basic version of the feature as soon as possible
- Gather feedback
- Improve the design
- Ship the improved product
- Gather feedback
- Repeat

# ENSURING THE PRODUCT BEHAVES AS EXPECTED

- Build it to match expectations
- Test it to ensure it matches those expectations, ideally every time you change your code
- Invest in your code to handle boundaries, edge cases, and adopt best practices

# PUTTING IT TOGETHER

- We needed to ship early and ship often
- We needed to be able to change our code base without fear of breaking existing features
- We needed to focus on writing better code and applying new techniques and solutions to existing code
- These changes would pay off our technical debt and increase quality

# HOW DID WE DO IT?

# SOLUTIONS

- Automated testing
- Continuous integration
- Agile development

# AUTOMATED TESTING

- Software is about matching behavior to expectations through code
- Your application codes the behavior
- The test codes the expectations

# CONTINUOUS INTEGRATION

- Occurs after committing changes to your code and before shipping a new version of your application
- Combines all the work that's been done into a release candidate
- Runs automated tests to ensure everything passes
- ONLY when all tests are passing is your new release made available
- New releases are ONLY provided after going through automated testing

# AGILE DEVELOPMENT

- Organized work in 2 week sprints
- Focused us on the most important work
- Retrospectives give a framework for adopting testing and continuous integration
- Enabled stakeholders to plan around releases
- A consistent development and release schedule lets us build in time to pay down technical debt

# AUTOMATED TESTING IN OMNIS

- OmnisTAP
- Built over the past 8 years
- Open-sourced in September 2017 and made freely available
- Brief introduction in this session; the second session will explore OmnisTAP in depth

# CONTINUOUS INTEGRATION WITH OMNIS

- OmnisCLI allows calling Omnis from the command line and hence used in a continuous integration tool to:
  - Build the latest changes into a library
  - Run OmnisTAP on that library
  - Update databases for testing and deployment
- We use a customized version of the Omnis VCS but are moving to git

# WHAT ABOUT

# DEVOPS?

# DEVELOPMENT + OPERATIONS = DEVOPS

- Automated testing, continuous integration, and agile development started gaining traction in the early-mid 2000's
- However, the proliferation of the Internet and cloud services meant companies needed to be able to deploy changes rapidly to stay competitive
- Traditional models of one team developing an application, another running QA on it, and yet another deploying it became a constraint


WORKED FINE IN DEV
OPS PROBLEM NOW
memegenerator.co


I DON'T ALWAYS TEST MY CODE
BUT WHEN I DO, I DO IT IN PRODUCTION
quickmeme.com

# DEVOPS IS A PHILOSOPHY

- Developers needed to be involved in solving deployment problem to get the best fixes as quickly as possible
- Cloud infrastructure needs code to manage it, and the applications running on them needed to be designed to scale with demand
- Operations and development needed to merge because each had a stake in the other succeeding

# WHAT DEVOPS HAS BECOME

- A buzzword
- A great way to get people to look at your LinkedIn profile
- A focus on tools that promise to solve all your problems overnight


WE DO DEVOPS ALREADY
JUST WITHOUT AGILE,
STANDUPS, CI, CODE OR ANY OF
THAT OTHER HIPSTER STUFF
memes.com

# DEVOPS AND OMNIS

- Omnis excels at letting a small team or single developer build usable solutions
- Omnis isn't likely being developed by one team, tested by another, and deployed by a third

- DevOps came from:
  - Operations needing to adopt existing best practices in the development world
  - Development needing to care about how the app was deployed and working
- I suspect everyone here cares about how well their app works

# OMNIS IS CATCHING UP TO THE CURVE

- The rest of our industry adopted agile practices, automated testing, and continuous integration years ago
- Omnis missed this boat, partially because the tools didn’t exist
- Omnis is already good for rapidly developing solutions (very DevOps) and simultaneously testing your code in a user environment (very, very DevOps)
- But eventually, you’ll fall deep into technical debt like we did without automated testing and continuous integration

# HOW DO WE "DEVOPS" WITH OMNIS STUDIO?

# AN INVITATION

- Let's add automated testing and continuous integration to the rapid development world of Omnis
- Improve the quality of your application for fun and profit
- Start focusing on being a better coder and building great software
- And tell everyone "I do DevOps with Omnis and it's awesome!"

# DEMO